

Patent Claims

1. Welding torch device of a welding robot, which is provided for electric arc welding, and in particular MIG or MAG welding, whereby the welding robot has a robot arm, on which is provided a connection device which can be rotated in relation to the robot arm, comprising

5 a fixing device for attaching the welding torch device to the welding robot,
a receiving device for holding a welding torch and for transferring driven rotatory motions to the said welding torch,
an electrical connection for a welding power cable, by means of which a robot side of the welding torch device can be electrically connected to a welding power source,

10 a current transfer device, via which the welding power cable can be electrically connected to a welding torch side of the welding torch device, wherein the current transfer device has a stator, which is provided for the rotationally fixed arrangement in relation to the robot arm, but can be rotated in relation to the connection device on the welding robot side,
a said leadthrough (14) of the stator, through which at least one of the expendable supplies required

15 for the welding process can be guided in the direction of the said receiving device (10), wherein the said receiving device (10) and the said fixing device (9) are embodied as rotors, which, as a result, can be rotated in relation to the stator, and the said receiving device (10) and/or the said fixing device (9) can be connected to the stator in an electrically conductive manner by means of a said electric contact means (25),

20 characterized by the said fixing device (9) of the rotor, which is designed for attaching to the connection device of the robot, whereby, by means of the attaching to the connection device of the robot, a rotational axis of the rotor is at least essentially aligned with the said rotational axis (8) of

the connection device of the robot and the rotor can be rotated about the said rotational axis (8) as well as about the said stator.

2. Welding torch device in accordance with claim 1, characterized in that a said longitudinal axis (16) of the said leadthrough is aligned with the said rotational axis (8) of the connection device.

5 3. Welding torch device in accordance with in accordance with [sic - Tr.Ed.] one of the two preceding claims 1 or 2, characterized in that the stator has a rotationally fixed electric connection for the welding cable, through which the rotational axis of the connection device runs.

10 4. Welding torch device in accordance with at least one of the preceding claims, characterized in that the said receiving device (10) for the said welding torch (11) is likewise provided with a leadthrough for the welding wire, whereby the said leadthrough (14) of the stator and the leadthrough of the receiving device (10) run at least essentially coaxially to one another.

15 5. Welding torch device in accordance with one or more of the preceding claims, characterized in that a said longitudinal axis (16) of a said recess (15) of the said leadthrough (14) of the stator runs at least essentially coaxially to the said rotational axis (8) of the rotatory motion of the connection flange on the robot side.

6. Welding torch device in accordance with one or more of the preceding claims, characterized in that a common rotational axis of the said fixing device (9) and of the said receiving device (10) runs coaxially to a said longitudinal axis (16) of the said leadthrough (14) of the stator.

7. Welding torch device in accordance with one or more of the preceding claims, characterized by insulating medium, which electrically insulates the fixing device from the stator, whereby the stator and the said receiving device (10) are connected to one another in an electrically conductive manner by means of a said contact means (24).

8. Welding torch device in accordance with one or more of the preceding claims, characterized in that the said contact means (24) has said elements, which are rotated together with the rotor about an axis, whereby the rotational axis of these elements are aligned with the said rotational axis (8) of the connection device of the robot.

9. Welding torch device in accordance with claim 7 or 8, characterized in that the said contact means (24) is embodied as a sliding contact means.

10. Welding torch device in accordance with claim 9, characterized by at least one force means, with which at least one said sliding contact element (28) of the said sliding contact means can be pressed against a contact partner.

11. Welding torch device in accordance with claim 10, characterized by at least two force means, with which the said at least one sliding contact element (28) can be pressed against contact partners in the axial and radial directions in relation to the axis of the rotatory motion.

12. Welding torch device in accordance with claim 11, characterized in that the force means are springy, and the said at least one sliding contact element (28) can be pressed against both a first

contact partner radially surrounding the said leadthrough (14) and a second contact partner axially offset to the said sliding contact element (28).

13. Welding torch device in accordance with one of the preceding claims 7 through 12, characterized by a said bell-shaped section (23) of the stator, in which the sliding contact means is arranged.

14. Welding torch device in accordance with one or more of the preceding claims, characterized by insulating medium, by means of which the said fixing device (9) can be electrically insulated against the current transfer device.

15. Welding torch device in accordance with one or more of the preceding claims, characterized in that the said leadthrough (14) is provided with a said recess (15), through which both the said welding wire (20) and inert gas can be fed to the said welding torch (11).

16. Welding torch device in accordance with claim 15, [sic, characterized in that? - Tr.Ed.] the electric connection for the welding power cable is part of a wall defining the said recess (15).

17. Welding robot for welding workpieces, which is embodied as a folding arm robot and which is provided with a connection flange, to which a welding torch device can be attached, characterized by a said welding torch device (7) in accordance with one or more of the preceding claims 1 through 16.